

Translation

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference A131-18858WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/FR2003/000785	International filing date (day/month/year) 12 mars 2003 (12.03.2003)	Priority date (day/month/year) 02 avril 2002 (02.04.2002)
International Patent Classification (IPC) or national classification and IPC C09D 105/08, D21H 19/34, 19/82, D21J 1/08, D06N 3/18, B65D 65/42		
Applicant AHLSTROM CORPORATION		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 18 septembre 2003 (18.09.2003)	Date of completion of this report 11 February 2004 (11.02.2004)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FR2003/000785

## I. Basis of the report

### 1. With regard to the elements of the international application:\*

- ☐ the international application as originally filed
- ☒ the description:  
 pages 1-13, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☒ the claims:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, as amended (together with any statement under Article 19  
 pages \_\_\_\_\_, filed with the demand  
 pages 1-13, filed with the letter of 22 January 2004 (22.01.2004)
- ☒ the drawings:  
 pages 1/4-4/4, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

### 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item. These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

### 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

### 4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/fig \_\_\_\_\_

### 5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/WO 03/00785

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Claims	1-13	YES
	Claims		NO
Inventive step (IS)	Claims	1-13	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-13	YES
	Claims		NO

### 2. Citations and explanations

Reference is made to the following documents:

**D1:** US-A-5 900 479 (GLASSER ET AL.) 4 May 1999, cited in the application

**D2:** DATABASE WPI Week 199026 Derwent Publications Ltd., London, GB; AN 1990-196200 XP002221823 'Modified paper contg. chitin and/or chitosan - has high wet strength, antimicrobial activity, water-resistant and alkali-resistance' & JP 02 127596 A (FUJIMORI IND CO LTD), 16 May 1990, cited in the application

**Comments:** An application must be comprehensible technically, but it must also clearly define the subject matter of the invention, that is indicate all the essential features thereof (PCT Article 6). Essential features should be understood to mean all the features required to obtain the desired effect or, in other words, required to solve the technical problem of the application.

**Viscosity** is considered to be an essential feature of the invention and its removal from claim 1 is contrary to PCT Article 34(2)(b).

On page 4, lines 19-23, a correlation is established

between molecular weight and viscosity which demonstrates the importance of viscosity for the applicability of the chitosan layer.

Furthermore, adding an acid to the aqueous chitosan solution appears to constitute an essential feature of the invention as, for a given chitosan concentration of predetermined molecular weight, the viscosity of the aqueous chitosan solution is dependent on the selected acid (see page 5, lines 14-26, page 7, lines 24-27, and example 1). The fluidity of said solution is crucial to producing the chitosan coating in a limited number of steps (see page 3, lines 23-26).

This feature should therefore be included in claim 1.

### 1. Novelty

None of the documents of the prior art cited in the International Search Report describes an organic and/or inorganic fibre carrier covered on at least one side thereof with a chitosan layer by depositing an aqueous chitosan solution having a weight average molecular weight below 130 000 g/mol and a concentration of 6 to 30% by weight.

The subject matter of claims 1-13 is therefore novel over the cited prior art (PCT Article 33(2)).

### 2. Inventive step

D2, which is considered to be the closest prior art, discloses an organic fibre (paper) carrier coated with 0.5 to 30g/m<sup>2</sup> (dry extract) of aqueous acidic chitosan solution. The molecular weight value of the chitosan used varies from 200 000 to 500 000 g/mol. The method of D2

requires the carrier to be coated with a plurality of chitosan layers to obtain a satisfactory amount of deposited chitosan.

The carrier which is the subject matter of claim 1 differs from the carrier of D1 in that the weight average molecular weight of the chitosan is below 130 000 g/mol.

The problem which the present invention is intended to solve can therefore be considered that of providing an organic and/or inorganic fibre carrier coated with chitosan in a limited number of steps for high chitosan grammages. -

Neither D2 nor any of the other cited prior art documents, whether considered alone or in combination, would lead a person skilled in the art to deposit on a carrier a limited number of layers of chitosan having a lower molecular weight without adversely affecting the desired barrier properties of said carrier.

The subject matter of claims 1-13 is therefore inventive (PCT Article 33(3)).

### 3. Industrial applicability

The subject matter of claims 1-13 is industrially applicable (PCT Article 34(4)(a)(i)).